

REMARKS

In accordance with the foregoing, the drawings and claims 1, 2, 6, 9-12, and 15-17 are amended. Claims 3, 7, and 18-20 are cancelled without prejudice or disclaimer. No new matter is presented in any of the foregoing and, accordingly, approval and entry of the amended drawings and claims are respectfully requested.

Claims 1-2, 4-6, and 8-17 are pending and under consideration.

CLAIM AMENDMENTS

Claims 1, 9, and 15 are amended so as to be dependent on claims 2, 10, and 16, respectively.

Claim 2 is amended to recite a communicating system includes "a converting device converting a protocol of the received data into another protocol on a transmission control protocol, the another protocol allowing a larger amount of data to be transferred at a time; a multiplexing device multiplexing data of multiple connections of the another protocol converted by said converting device; and a transmitting device transmitting data multiplexed by said multiplexing device to a network by continuously using the another protocol." (See, for example, pages 18-19 starting at line 25, and pages 23-24, starting at line 10).

Claim 6 is amended to recite a communicating system includes "converting a protocol of data transmitted from the server to the client into another protocol on a transmission control protocol, the another protocol allowing a larger amount of data to be transferred at a time , and by multiplexing data of multiple connections of the another protocol, and transmitted to the network by continuously using the another protocol; a demultiplexing device demultiplexing the received data; (and) a converting device converting the protocol of the demultiplexed data." (See, for example, pages 18-19 starting at line 25, and pages 23-24, starting at line 10).

Claim 12 is amended to recite a communicating method, includes "forming a virtual tunnel a multiplexing protocol on a transmission control protocol hiding a network delay that takes place between a server and a client; and continuously using the virtual." (See, for example, pages 18-19 starting at line 25, and pages 23-24, starting at line 10).

Claims 10 and 11 and claims 16 and 17 are amended in a similar manner to claims 2 and 6.

No new matter is presented in any of the foregoing and, accordingly, approval and entry of the amended drawings and claims are respectfully requested.

ITEM 2: OBJECTION TO DRAWINGS - FIG. 1

The Examiner objects to FIG. 1 contending that:

(i) it is unclear if items (1) and (2) contain items (5)- 10) or are a separate device. The drawing suggests that the server can send information to (1) of (5) alternatively, but

the disclosure suggests that items (1), (2) and (5)-(10) are all part of the same device 3.

(Action at page 2).

Applicant submits that FIG. 1, illustrating relay of information, is clear and in accordance with the specification. As described in the specification on pages 6-8, starting at line 13:

(f)ig. 1 is a block diagram showing the theory of the present invention. A first aspect . . . is a communicating system comprising a buffer 1 and a transferring device 2 . . . A second aspect. . . is a communicating system comprising a receiving device 5, a converting device 6, and a transmitting device 7. The communicating system relays a communication between a server 3 and a client 4 . . . A third aspect of the present invention is a communicating system comprising a receiving device 8, a converting device 9, and a transmitting device 10. The communicating system relays a communication between a server 3 and a client 4.

That is, according to aspects of the invention, the sever can send information to buffer 1 or receiving device 5, which are not precluded from being part of a same device. Applicant submits that FIG. 1 is clear and requests withdrawal of the objection.

ITEMS 3-5: OBJECTION TO DRAWINGS - FIGs. 1, 7, AND 14

The Examiner objects to FIG. 1, 7, and 14 as containing typographical errors. (Action at page 5). FIG. 1, 7 and 14 are amended herein as suggested by the Examiner, and withdrawal of the objection to the drawings is requested.

ITEMS 7-9: OBJECTION TO CLAIMS 6-19

The Examiner objects to claims 6 and 9 because of informalities i.e., a typographical error. Claims 6 and 19 are amended herein as suggested by the Examiner and withdrawal of the objection is requested.

ITEM 10: REJECTION OF CLAIMS 18-20 under 35 U.S.C. §101

The Examiner rejects claims 18-20 under 35 U.S.C. §101 as directed to non-statutory subject matter. Claims 18-20 are cancelled without prejudice or disclaimer and withdrawal of the rejection is requested.

ITEMS 13-15: REJECTION OF CLAIMS 1, 9, 12, 15 and 18 UNDER 35 U.S.C. §102(b) BY DILLON (U.S.P. 5,995,725)

The Examiner rejects claims 1, 9, 12, 15 and 18 as anticipated by Dillon. (Action at page 4).

As set forth in MPEP §706.02 entitled Rejection on Prior Art, anticipation requires that the reference must teach every aspect of a claimed invention. Dillon does not support an anticipatory-type rejection by not describing features recited by the present application's independent claims.

According to aspects of the present invention, a multiplexed communication is accomplished on a continuous connection associated with a TCP-based particular protocol including a protocol-converting device for this particular protocol. Consequently, it is possible to perform an application-level protocol conversion, which allows a substantial increase in throughput over the throughput level achievable by a transport level conversion.

According to the application level protocol conversion according to aspects of the present invention, required kinds of information are transmitted to a gateway having been incorporated into one packet, separated into numerous kinds e.g., five kinds of commands by the gateway in accomplishing the communication. Therefore, a download can be completed with only one RTT given that bandwidth is not restricted. In addition, establishing a connection is not required since an existing connection can be re-used, and thus saving a RTT.

Dillon, on the other hand, attempts to improve throughput, associated with the TCP communication accomplished via a satellite, in only one direction, a server-to-client direction. (See, for example, col. 11, lines 21-27). A gateway server, as taught by Dillon is configured to return to the server an ACK associated with a TCP on behalf of a client at an earlier time point for spoofing a delay ascribed to a time required for a communication between the server and the client. A proper ACK issued by the client is discarded in the gateway server for retaining conformity. The configuration only employs a transport level protocol conversion.

Features Of The Claims Not Taught By Dillon

Independent claim 12, as amended, recites "forming a virtual tunnel having a multiplexing protocol on a transmission control protocol hiding a network delay that takes place between a server and a client;" and "continuously using the virtual tunnel."

While Dillon teaches (cols. 6 and 7, staring at line 52) tunnelling, Dillon does not teach forming a virtual tunnel having a multiplexing protocol on a transmission control protocol hiding a network delay, and does not teach teach continuously using the tunnel. Therefore, independent claim 12 is patentable.

Dependent claims 1, 9, and 15 (all as amended) recite "buffering data transmitted from the server to the client and accelerating data output from the server so as to increase a throughput assigned to a connection to the client by the server."

Dillon does not teach buffering data transmitted from the server to the client and accelerating data output from the server so as to increase a throughput assigned to a connection to the client by the server, as the Examiner contends. While the throughput between the server and the client as taught by Dillon improves, since the delay ascribed to going through a satellite being spoofed and is unnoticeable for the server, such improvement is concerned

with the transport lever associated with the method of relaying IP packets), and cannot spoof a delay required by an application level protocol. For example, a waiting state waiting to receive a response to a transmitted command takes place at least 5 times (5 RTT) in association with an anonymous ftp download. These repetitions of the waiting state correspond to establishing a connection, specifying a user name, specifying a password, specifying a data communication port and specifying a transferred file. Accordingly, the throughput achieved by the method of Dillion remains less than one-fifth (1/5) of methods according to aspects of the present invention.

Conclusion

Claim 18 is cancelled without prejudice or disclaimer and withdrawal of the rejection is requested.

Since Dillon does not describe features recited in claims 1, 9, 12, 15 (all as amended), the rejections should be withdrawn and the claims allowed.

ITEMS 16-3: REJECTION OF CLAIMS 2, 4, 6, 10-11, 16-17, and 19-20 UNDER 35 U.S.C. §102(e) BY TOPOREK (U.S.P. 6,460,085)

The Examiner rejects claims 2, 4, 6, 10-11, 16-17, and 19-20 under 35 U.S.C. §102(e) as being anticipated by Toporek et al. (U.S.P. 6,460,085). (Action at pages 5-6).

The cited art Toporek improves throughput associated with TCP communication accomplished via a satellite with respect to both directions between a server and client. The method taught by Toporek is as described above for Dillion with respect to employing a transport level protocol conversion, however, in a system taught by Toporek it is *arugendo* unnecessary for a client to be equipped with a specific protocol.

However, according to aspects of the present invention method, a greater increase in throughput is achieved than is possible by a method as taught by Toporek. This is because aspects of the present invention employ an application level protocol conversion and at the same time achieve an increase in the upload speed in the direction from a client to a server.

Features Of The Claims Not Taught By Toporek

Independent claim 2, as amended, recites a communicating system "converting a protocol of the received data into another protocol on a transmission control protocol, the another protocol allowing a larger amount of data to be transferred at a time; a multiplexing device multiplexing data of multiple connections of the another protocol converted by said converting device; and a transmitting device transmitting data multiplexed by said multiplexing device to a network by continuously using the another protocol."

While Toporek teaches (col. 11, starting at line 36) a converting device (translation module) converting a protocol of the received data (TCP) into another protocol, Toporek does

not teach converting a protocol of the received data into another protocol on a transmission control protocol, the another protocol allowing a larger amount of data to be transferred at a time. In addition, Toporek does not teach continuously using another protocol.

Independent claim 6 recites a communicating system "converting a protocol of data transmitted from the server to the client into another protocol on a transmission control protocol, the another protocol allowing a larger amount of data to be transferred at a time." (Emphasis added). Independent claim 10 recites a medium on which a program for a computer is recorded, causing the computer to perform "converting a protocol of the received data into another protocol . . . the another protocol allowing a larger amount of data to be transferred at a time. (Emphasis added). Independent claim 16 recites a communicating system including "transmitting means for transmitting data multiplexed by said multiplexing device to a network by continuously using the another protocol." (Emphasis added).

As discussed above, these features are not taught by Toporek. Therefore, claims 6, 10 and 16 are also patently distinguishable from Toporek.

Conclusion

Claims 19-20 are cancelled without prejudice or disclaimer and withdrawal of the rejection is requested.

Since Toporek does not describe features recited in independent claims 2, 6, 10, 16 and respective dependent claims, the rejections should be withdrawn and the claims 2, 4, 6, 10-11, 16-17, allowed.

ITEMS 24-26: REJECTION OF CLAIMS 5 AND 8 FOR OBVIOUSNESS UNDER 35 U.S.C. §103(a) OVER TOPOREK IN VIEW OF KIRBY (U.S. P. 6,671,285.

The Examiner rejects claims 5 and 8 under 35 U.S.C. §103(a) as being unpatentable over Toporek in view of Kirkby. (Action at pages 8-10).

The Action concedes that Toporek fails to teach:

. . . a charging device performing a charging process for a service provider of the server, wherein said charging device determines whether or not the request from the client is a request to be issued to the server, wherein when the request from the client is the request to be issued to the server, said charging device charges the service provider.

(Action at page 8, and 9-10)

Prima Facie Obviousness Not Established

Features Not Taught By Cited Art Alone Or In Combination

As provided in MPEP §2143.03 "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F. 2d 1981, (CCPA 1974)."

Applicant submits that Kirkby does not teach that a charging device determines whether or not the request from the client is a request to be issued to the server.

Kirkby merely teaches charging a fee associated with a use of an ATM network based on the size of an allocated bandwidth using a plurality of communication-carrier providers operating different ATM networks between separately located LANG of a pair. Kirkby teaches efficient routing only when the communications carrier providers are selected based on charged-fee information announced respectively from the communication carrier providers.

Conclusion

Since *prima facie* obviousness has not been established, the rejection should be withdrawn and claims 5 and 8 allowed.

ITEMS 27-28: REJECTION OF CLAIMS 3 AND 14 FOR OBVIOUSNESS UNDER 35 U.S.C. §103(a) OVER DILLON IN VIEW OF KIRBY ET AL.

The Examiner rejects claims 13 and 14 under 35 U.S.C. 103(a) as being unpatentable over Dillon in view of Kirkby. (Action at pages 10-12).

The Action concedes that Dillion does not teach "charging a service provider of the server for a communication using the virtual tunnel." (Action at page 12).

The Examiner contends that Kirkby teaches a method of charging network users for use of certain network resources, and it is obvious to modify Dillon.

***Prima Facie* Obviousness Not Established**

Applicant submits that there is no motivation provided within Dillion to charge a user of a client charging a service provider of the server for a communication using the virtual tunnel.

As provided in MPEP §2144. 04:

The mere fact that a worker in the art could rearrange the parts of the reference device . . . is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation . . . without the benefit of appellant's specification, to make the necessary changes in the reference device. *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).

Dillion teaches (col. 1, lines 58-60)overcoming problems of allowing a user to download data using a fast satellite link. Applicant submits that a system charging service providers would not facilitate such a download.

Conclusion

Claim 3 is cancelled herein and withdrawal of the rejection is requested.

Since *prima facie* obviousness has not been established, the rejection should be withdrawn and claim 14 allowed.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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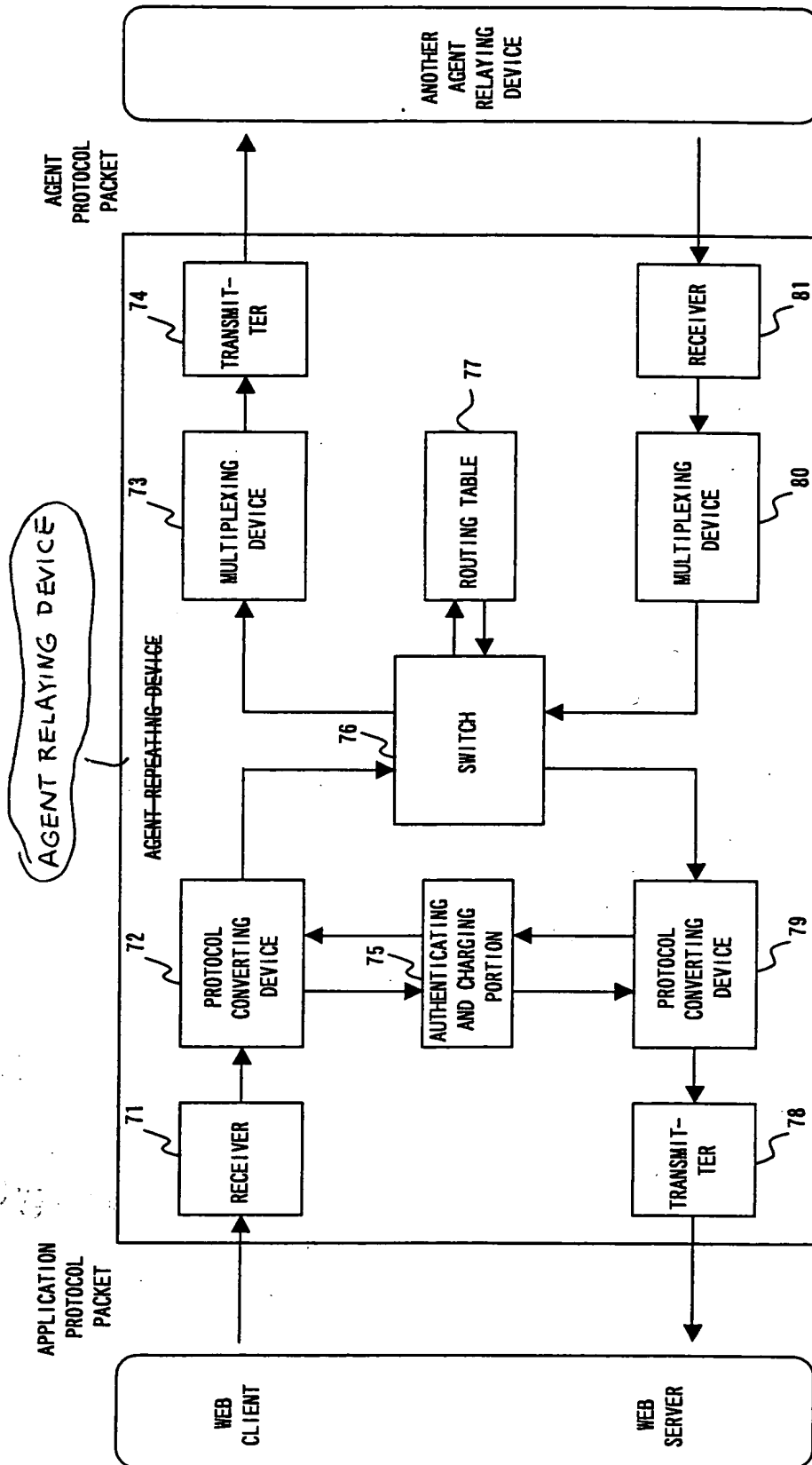


FIG. 14



ANNOTATED SHEET

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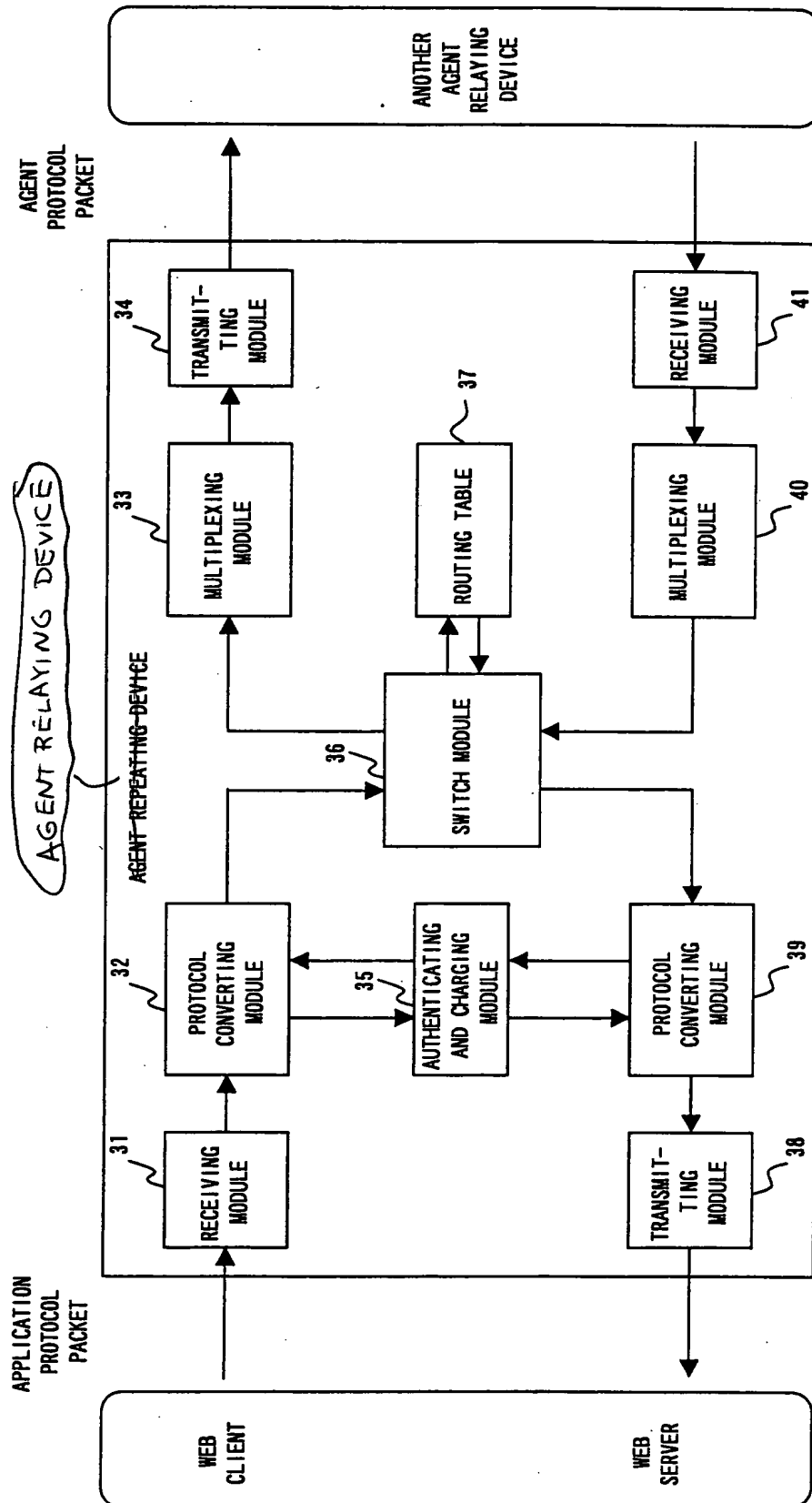


FIG. 7



ANNOTATED SHEET

DOCKET NO.: 826.1662

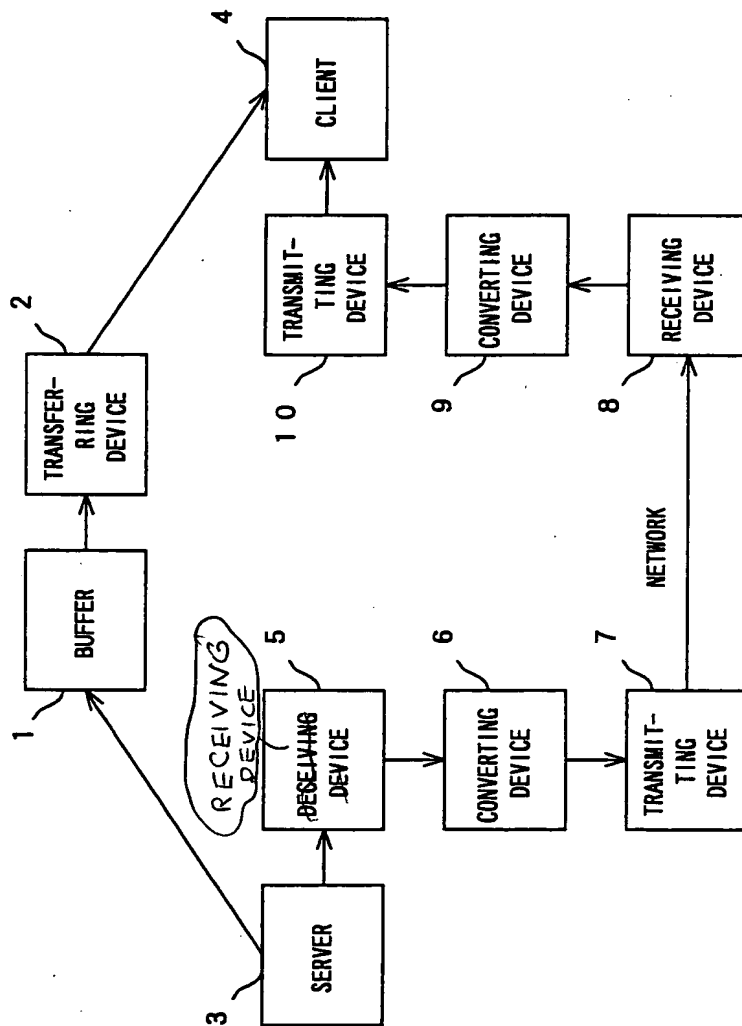


FIG. 1